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Enterprise social networking: the role of microblogging in knowledge work

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ENTERPRISE SOCIAL NETWORKING: THE ROLE OF MICROBLOGGING IN KNOWLEDGE WORK

by

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Dissertação apresentada como requisito parcial para a obtenção do grau de Mestre em Gestão de Informação, Especialização em **Gestão de Sistemas e Tecnologias de Informação**.

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ABSTRACT

Microblogging in the workplace as a functionality of Enterprise Social Networking (ESN) platforms is a relatively new phenomenon of which the use in knowledge work has not yet received much attention from research. In this cross-sectional study, I attempt to shed light on the role of microblogging in knowledge work. I identify microblogging use practices of knowledge workers on ESN platforms, and I identify its role in supporting knowledge work performance. A questionnaire is carried out among a non-representative sample of knowledge workers. The results shed light on the purposes of the microblogging messages that knowledge workers write. It also helps us find out whether microblogging supports them in performing their work. The survey is based on existing theory that supplied me with possible microblog purposes as well as theory on what the actions of knowledge workers are. The results reveal that “knowledge & news sharing”, “crowd sourcing”, “socializing & networking” and “discussion & opinion” are frequent microblog purposes. The study furthermore shows that microblogging benefits knowledge workers’ work. Microblogging seems to be a worthy addition to the existing means of communication in the workplace, and is especially useful to let knowledge, news and social contact reach a further and broader audience than it would in a situation without this social networking service.

KEYWORDS

Enterprise social networking; microblogging; purposes; knowledge work; knowledge actions

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LIST OF ABBREVIATIONS

ESN	Enterprise Social Networking
IBM	International Business Machines Corporation

1 INTRODUCTION

Knowledge work is work that deals with “knowledge, ideas and information” rather than manipulation of physical products and which has a degree of creativity (Drucker & Smith, 1966, p. 4; Frenkel, Korczynski, Donoghue, & Shire, 1995; Reinhardt, Schmidt, Sloep, & Drachsler, 2011). Also knowledge work is sometimes characterized by co-location, autonomy and uncertainty (Newell, 2009). Knowledge-intensive firms are often flatter and have more autonomy for the knowledge workers (Newell, 2009). Based on these characteristics it is argued that knowledge work needs not to be too managed but rather ‘enabled’ (Amabile, Schatzel, Moneta, & Kramer, 2004; Davenport, Thomas, & Cantrell, 2012; Nonaka, Toyama, & Konno, 2000). This enabling can be done partly by providing technology. That is, by providing knowledge workers with systems that support them in performing their work. A recent phenomenon in the knowledge and collaboration management systems sphere is Enterprise Social Networking (ESN). ESN is “the application of Internet platforms for relationship building and short message exchanges in the context of workplace communication” (Riemer & Richter, 2012, p. 2).

To give an idea of what this means: examples of public social networking platforms are Twitter and Facebook. Similarly, examples of enterprise social software are Yammer and Socialtext. The functionality of most of these ESN platforms is built around a content stream where the latest activities appear, a so called ‘news feed’. This news feed consists of microblogging messages or microblogs, which are short elements of content that people publish to provide updates on their current activities or observations, directly or indirectly to others (Ehrlich & Shami, 2010, p. 1; Java, Song, Finin, & Tseng, 2007; Kaplan & Haenlein, 2011; Zhang, Qu, Cody, & Wu, 2010). Enterprise microblogging is therefore publishing small elements of content in an enterprise context, although not necessarily work-related (Zhao & Rosson, 2009).

Reinhardt et al. (2011) argue that knowledge workers become ever more interconnected through social networks. ESN is said to yield return on investment where used properly and 86% of managers believe social business in general will become important in the upcoming years (if not already) (Forrester Research, 2011; Huy & Shipilov, 2012; Kiron, Palmer, Phillips, & Kruschwitz, 2012, pp. 3–5). Companies do not regret stepping into the use of ESN platforms, concludes Andrew McAfee, a principal research scientist at MIT’s Center for Digital Business (Kiron, 2012b). In Enterprise 1.0 (the first generation of digital infrastructures for the enterprise,

characterized by a top-down approach) the stream and purpose of information could be controlled. In Enterprise 2.0 (the second generation, characterized by a bottom-up approach) this is much less the case (Trkman & Trkman, 2011).

Could ESN support knowledge work? Information can often flow freely in ESN services such as microblogging (Kim, 2012) and having such an environment where information flows freely is something managers are often afraid of (Kiron, 2012b). However, such a free environment is actually a better place for innovation than following structured paths (Baron, Hannan, & Burton, 2001; Hopins, 2011; Kiron, 2012b; Kiron et al., 2012). In an uncontrolled social networking environment, one might argue, people contribute because they want to, and not because they are told to do so (Bradley & McDonald, 2011). This gives room for multiple but unknown roles of enterprise social networking, especially because users shape the way technology is used in practice (Orlikowski, 2000). Research on its role in knowledge work can show whether it is used for knowledge sharing, socializing, event notification or other purposes. It can inform managers looking for information before implementing ESN platforms. Riemer, Scifleet, & Reddig (2012), Riemer & Richter (2012) and Elsevier (2013) call for research on the role of ESN technologies like microblogging.

How Enterprise Social Networking technologies support knowledge work is therefore a valid question that needs answers. In this thesis, I help reveal what its role is in knowledge work by focusing specifically on the ESN facility microblogging. My main research question is "What role does microblogging - as a facility of Enterprise Social Networking platforms - play in knowledge work?" To answer this, I will compare and contrast existing theory with my own research. Theoretically, my research questions are (1) *"What do knowledge workers do?"* to identify the characteristics of knowledge work and the actions that knowledge workers carry out during their job, and (2) *"How can the different purposes of microblogging be identified?"* to identify genres for characterizing microblogging messages by their purpose. Along the way, I will introduce ESN and make a theoretical connection between ESN and knowledge work. Empirically, I will look at microblogging from two viewpoints: (1) *"What are the purposes of the microblogging messages that are being published by knowledge workers?"* and (2) *"How does microblogging support the actions carried out by knowledge workers?"*

The structure of this thesis is as follows. In the next section I review the literature. I describe what knowledge work is, what ESN and microblogging is, and why ESN is promising for knowledge work. I then review the literature on what the

purposes of microblogging are in enterprise contexts. In the 'Methodology' section, my research design is laid out including the purpose, strategy, reliability and validity. After that, I describe the results in the section 'Results & Discussion'. This thesis ends with a general conclusion of the research results, an overview of the limitations of my work, as well as recommendations for future work.

2 LITERATURE REVIEW

In this section I elaborate on knowledge work, ESN & microblogging, and what purposes of microblogging messages are identified in the literature. Throughout the text, I try and answer the research questions (1) “What do knowledge workers do?” and (2) “How can the different purposes of microblogging be identified?”

2.1. KNOWLEDGE WORK: WHAT DO KNOWLEDGE WORKERS DO?

According to Frenkel et al. (1995, p. 781) and to some extent Schultze (2000, p. 5), knowledge work refers to organizational activities and occupations that are characterized by theoretical knowledge, creativity and intellective (and often social) skills and is, along those dimensions, at the opposite of routine work. Much of what is called knowledge work however can in fact be quite routine-intensive work (Alvesson, 2001). Alvesson exemplifies this by describing large knowledge-intensive consultancy firms whose strength is the ability to quickly mobilize a workforce of consultants that work according to predefined steps. This harnessing of existing knowledge is also part of what most see as knowledge work.

In fact, I agree with Blackler (1995) that, to some extent, “all individuals and all organizations, not just so-called 'knowledge workers' or 'knowledge organizations', are knowledgeable.” Drucker (1966) made the distinction between manual labor, which only concern is to “do things right” (p. 2), and knowledge work, which is concerned with “doing the right things” (p. 3) instead. Doing the right things is a product of using your brain rather than your hands, which leads to “effectiveness”. This is a product of the fact that rich societies can afford bigger investments in education through which people gain the skills to be effective. Because people in rich developed countries are generally much more educated, Drucker argues, they are the ones who create competitive advantage, if they can be made productive (p. 5). More knowledge workers would mean more and better innovation and thus an advantage over other societies. And because of the globalization, rich societies assumingly have a relatively much larger knowledge worker force.

In some way, the discussion above means that the more you need to ‘think for yourself’, the more of a knowledge worker you are. In that way I agree with Drucker that indeed knowledge work is work that deals with “knowledge, ideas and information” (p. 4) rather than manipulation of physical products. Reinhardt et al. (2011, p. 153) describe this as “the execution of knowledge-intensive tasks [...]”. It is

also argued that not all 'mental' work is knowledge work, but rather only work that deals with novel problems (Mundbrod, Kolb, & Reichert, 2012) in a "non-linear and creative" way (Frenkel et al., 1995, p. 781; Reinhardt et al., 2011, p. 150) with a statistically infrequent (original) output (Frenkel et al., 1995, p. 779)¹.

These definitions are not without their shortcomings. To test if work produces original, statistically infrequent output, is a difficult and perhaps unnecessary task. Unnecessary because creativity and working with ideas already implies that some new way of thinking is necessary, assumingly leading to a 'new' solution². As for knowledge working only dealing with novel problems, this can also be refuted; much of academic work is finding new solutions for existing problems (e.g. electricity consumption or battery techniques).

Coming to an output in a creative way is perhaps a more reliable criterion for distinguishing knowledge workers. Working with ideas, information and knowledge implies renewal and creativity, since these things generally become obsolete with time in the market economy. It draws a line between, for example, a secretary doing routine work (with information) and a marketing employee doing more creative work. No knowledge work can fully exist of creative, non-linear work though. As Alvesson (2001) argues, much of what is considered knowledge work has a degree of foreknowledge and recurring tasks (routine), such as IT consultancy or accountancy. I believe this means that knowledge *work* must not be confused with occupations that are often marked as knowledge *workers*. In fact, turning it positively, almost any type of worker can do knowledge work. At Toyota, manual workers were empowered to make their process more efficient and less prone to errors, and they made use of this by creating new ways to work: "One of our favorite stories was the employees at a Toyota plant who were concerned with the potential for error in an installation process that had 12 possible configurations for sun visors and nine configurations for seat belts. Picking the right parts when it came time to install them was a distraction. So the team went down the street to Wal-Mart and bought plastic totes that could be pre-packed with the right combination of parts." (Adams, 2010). They perhaps don't fit many definitions of knowledge *workers*, but part of their work can still be classified as knowledge *work*, where creativity and knowledge are used to 'make things better'. If

¹ There exist too many (complex) definitions of knowledge work to come to a complete overview. See the used references for a more complete discussion of conceptualizing knowledge work

² Or not, but this does not mean the way to the solution was not knowledge work

the Toyota employees will start to define and follow the more efficient process, it will become routine again and therefore less “knowledge work”.

I define knowledge work as *work that deals with knowledge, ideas and information, which needs creativity to accomplish tasks*. This means indeed that a relative large amount of people somehow do knowledge work, which sounds credible since, in the western world, we live in a knowledge society. The tasks or actions of a knowledge worker will be elaborated on a bit further.

It must be noted that indeed knowledge work can have many definitions, and that this discussion does not end here. The most important aspect of a knowledge worker however in my opinion, is that he or she has to think about “doing the right things”, something intrinsic to dealing with ideas, knowledge and information because it demands filtering data and doing the right thing with it. It also implies uncertainty, since working with ideas, information and knowledge implies that there is a need for new ways to best fit a new situation.

Knowledge work can further be defined by the actions that are carried out by knowledge workers. Reinhardt et al. (2011) researched existing literature on what they call “**knowledge actions**”. These knowledge actions are defined as “fundamental building blocks of knowledge work, providing work execution patterns” (Hädrich, 2008; Reinhardt et al., 2011, p. 155). *Actions* are part of the interactions between a human and the outside world, made visible in Figure 2.1, together with *perceptions* (see figure).

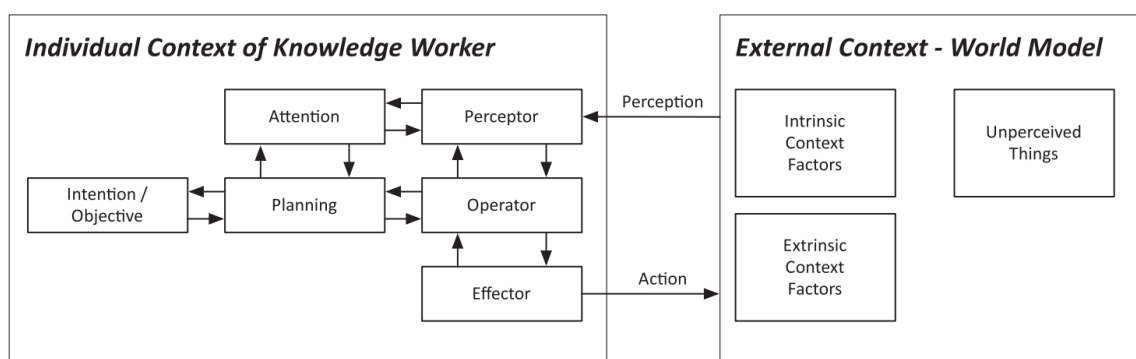


Figure 2.1 - Actions as part of human-world interactions (Reinhardt et al., 2011, p. 154)

Knowledge actions, as we see in the figure, are perhaps the only point where the human-world interactions of knowledge work are measurable (Engeström, Miettinen, & Punamäki, 1999). I agree with Reinhardt et al. that knowledge actions are a good starting point for knowing what knowledge work is and I also believe that therefore

knowledge *actions* are a good viewpoint from where to test if a certain technology (like microblogging) is helpful for knowledge work.

Reinhardt et al. first conducted a task execution study, tracing and analyzing every operation done by a number of knowledge workers when fulfilling their task with sensors in the computer system. Out of this they developed a list of knowledge actions that corresponded largely with the existing literature. They then tested the identified knowledge actions empirically using a survey among 43 knowledge workers. Table 2.1 shows the identified knowledge actions acquisition, analyze, authoring, co-authoring, dissemination, expert search, feedback, information organization, information search, learning, monitoring, networking and service search. In case an action is specifically mentioned in existing literature about enterprise microblogging, it is mentioned in the last column of the table and elaborated on further in this thesis.

Knowledge action	Definition	Example / explanation	Mentioned in enterprise microblogging literature?
Acquisition	Information gathering specifically aimed at developing skills	E.g. searching for information how to [...]	(Kiron et al., 2012)
Analyze	To analyze something in order to understand it completely	E.g. to analyze financial data or a complex problem.	-
Authoring	Composing textual or other media, documentation. (Externalization in Nonaka's 1995 terms)	Basically anything written on microblogging is authoring.	-
Co-authoring	Collaborative authoring.	E.g. Working together on a proposition or document	-
Dissemination	Sharing / spreading information or information objects		(Riemer & Richter, 2012)
Expert search	Searching for an expert in a certain area or on a specific topic	E.g. searching for an expert in niche marketing	(Riemer & Richter, 2012; Riemer et al., 2012)
Feedback	An evaluative response on an idea		(Riemer & Richter, 2012)
Information organization	Organization of explicit knowledge	Sharing ideas or links in order to remember them.	microblogging (Riemer et al., 2012) and blogging (Efimova, 2004)

Information search	Searching information about something because it's yet unknown	- Different from acquisition which is for specific skills - E.g. looking up a definition of a word or looking up a saved file	(Riemer & Richter, 2012)
Learning	Informal learning processes during work execution as well as structured training.	Learn by doing or by training. Acquisition might be part of this.	(Riemer & Richter, 2012)
Monitoring	Updating oneself or staying up-to-date about a selected topic, person, domain or community		(DiMicco et al., 2008a; Riemer & Richter, 2012)
Networking	Interaction with other persons or entities to exchange information (knowledge) and develop contacts	Expert search may be part of this	(DiMicco et al., 2008a; Kiron et al., 2012; Riemer & Richter, 2012)
Service search	Looking up a specialized service	E.g. searching for someone that offers translation services Related to expert search	-

Table 2.1 - Knowledge actions (Reinhardt et al., 2011)

Some critical remarks can be made. The study is not based on a large sample of knowledge workers, and not all previously identified knowledge actions were proven to be equally valid in the survey. The knowledge actions authoring, co-authoring, and service search had the lowest agreement by the respondents³ (although still positive). This is interesting because it would mean that knowledge workers do not spend a considerable amount of time on documentation or externalization into explicit knowledge (Nonaka & Takeuchi, 1995). At the same time, microblogging is authoring, which could indicate that microblogging is not a large part of knowledge workers' jobs. A weak point of the peer-reviewed research by Reinhardt et al. is perhaps the small sample of 43 respondents. Also, some of the sources that Reinhardt et al. use are based on experience rather than empirical research. However, I believe they show enough empirical research and theory grounding to support the abovementioned knowledge actions.

Most of the knowledge actions reflect somehow the description of microblogging use patterns that were identified by DiMicco et al. (2008a) at IBM, by Riemer & Richter (2012) at professional service firms and by Kiron et al. (2012) at all kinds of

³ Lowest agreement on the actions being part of the respondents' work. Mean 3.35 for "service search", mean 3.3 for "co-authoring". Highest score is 5 = fully agree

firms. By asking knowledge workers how the online microblogging environment helps carrying out these actions, an understanding can be obtained about how microblogging supports knowledge work.

In the following section, I elaborate more on ESN for knowledge work. I do this by discussing literature that shows how ESN might be beneficial.

2.2. INTRODUCING ENTERPRISE SOCIAL NETWORKING & MICROBLOGGING

The term Enterprise Social Networking is not yet broadly used in academic papers⁴. It is however a correct term that best describes the phenomenon and is also increasingly popular after its introduction around 2008 (Google Inc., 2013). In fact, it actually seems that academics or publishers are just slow in adapting the term, given its high popularity in trade journals⁵. Enterprise Social Networking describes “the use of online social networks or social relations among people who share business interests and/or activities” and is often “a facility of enterprise social software” (Wikipedia, 2013). According to IDC (2012), “[ESN] represents a wider group of social applications that facilitate the connection of people inside and outside the firewall.” Three important elements can be distinguished: The *network*, the *networking*, and the *software*. An (enterprise social) **network** is a set of social entities (e.g. people, organizations) that are linked by a social relationship. These links can be friendship, co-working or business relationships (Garton, Haythornthwaite, & Wellman, 1997; Newman, 2003; Richter, Riemer, & vom Brocke, 2011, p. 90). **Networking** as a social activity means initiating and maintaining productive relationships for business purposes in an enterprise context (Merriam-Webster, 2013). The Enterprise Social Networking site or platform, which is the **software**, enables the visualization of the network and facilitates the networking between people. In a knowledge work context, it visualizes the “ongoing practices of knowledge workers” (Newell, 2009, p. 158). Sometimes, the use of the term enterprise social *network* actually fits the description of enterprise social *networking platform* (e.g. IDC, 2012).

Examples of ESN software are Yammer (see Figure 2.2), Socialtext, Jive software, Sharepoint, Newsgator, Hall.com, Socialcast, IBM Connections and Chatter by

⁴ A Proquest search delivers **21** results in *scholarly* journals for “enterprise social networking”. Please note the possibly long process of reviewing and publishing could be the reason for less publications in scholarly than in trade journals.

⁵ A Proquest search delivers **512** results in *trade* journals for “enterprise social networking”

Salesforce.com (IDC, 2012). Besides microblogging, they also have private messaging functionality and the ability to create discussion groups or other group based functionality. Besides this conversation capability, they can offer content collaboration, forums, wikis and search capabilities (IDC, 2012; Kleinschmidt, 2009) for e.g. expert searching (Jarrahi & Sawyer, 2013).

Summarizing, enterprise social networking is the activity of creating and maintaining relationships in an enterprise context for any purpose. It generally deals with online social networking sites where employees can both share context as well as follow content shared by others (DiMicco et al., 2008a). As I mentioned before, in this thesis the role of its microblogging features is the focus of investigation.

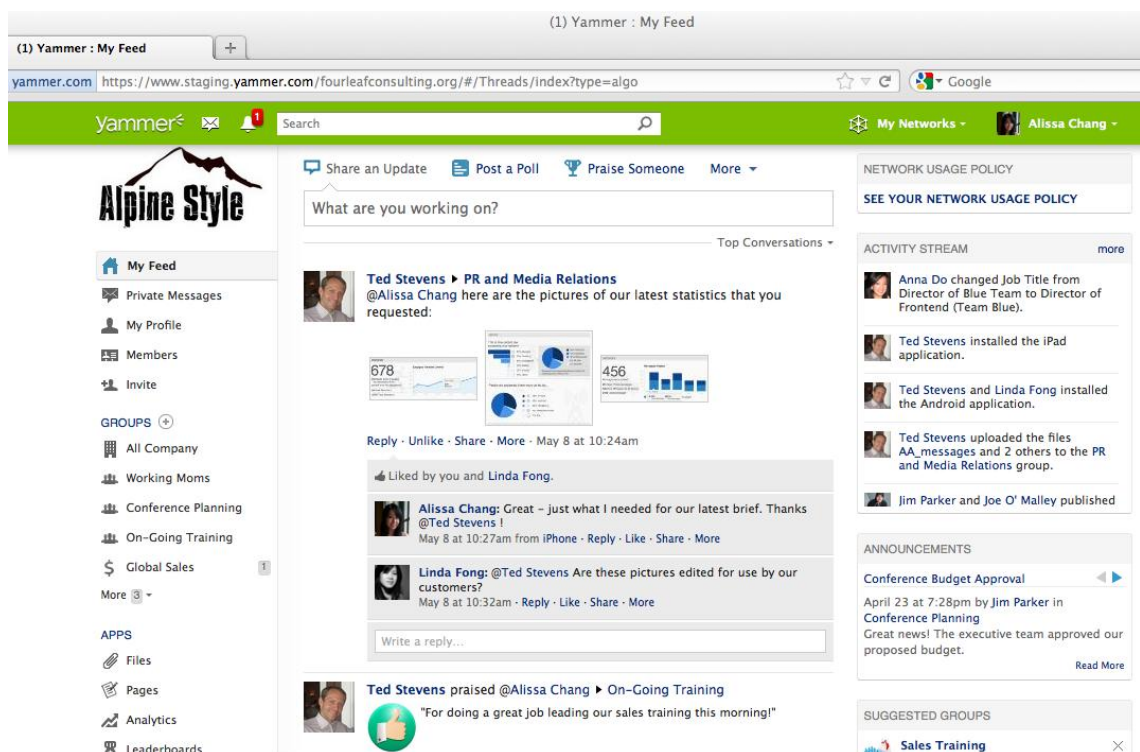


Figure 2.2 - The content stream of Yammer, an ESN platform (Yammer)

As stated in the introduction, microblogging is a type of blogging in which users publish small elements of content such as short posts about their current activities or thoughts (Java et al., 2007; Kaplan & Haenlein, 2011; Zhang et al., 2010, p. 123). Enterprise microblogging is therefore publishing small elements of content in an enterprise context, although not necessarily work-related (Zhao & Rosson, 2009). The difference in target group and purpose between public microblogging and enterprise microblogging quickly become obvious by looking at the platforms themselves:

whereas Twitter asks “What’s happening” as an invitation to share a status update, Yammer, Socialtext and others ask “What are you working on?”. A second difference is that enterprise microblogging platforms generally restrict their use to employees of the same domain (Zhang et al., 2010, p. 124). Another main difference between public platforms (Twitter) and several ESN platforms (Yammer, Socialtext, Jive, Hall.com) is that the ESN platforms do not limit the amount of characters to 140 as Twitter does. Also, generally attachments are allowed at ESN platforms, as well as the creation of public and private groups. Hence, the use of enterprise microblogging may be very different than the use of its public equivalent. How it can be of benefit to organizations will be elaborated on in the next section about knowledge work and ESN.

2.3. KNOWLEDGE WORK AND ESN

*“[...] managing knowledge work in the twenty first century is less about direct control and capture of knowledge, in machines or systems [...] and more about **providing an enabling context** that supports the processes and practices of applying knowledge for specific tasks and purposes.”* (Newell, 2009, p. 25)

ESN can help *locate knowledge*. Former Hewlett Packard CEO Lew Platt once said “If [only] HP knew what HP knows, we’d be three times as profitable” (Davenport & Prusak, 2000, p. xxi). ESN has the ability to make the invisible visible and thus help locate knowledge (Kiron, 2012a). (Enterprise) social networking is also a key element of workplace e-learning, argue Wang (2011) and London (2013)⁶. Online collaborative e-learning (blogs/wikis) has proven to engage students and leads to a more deep and thorough understanding of the material (Zhang, Guo, & Zhang, 2010). Although in my own experience I did not see people use blogs and wikis for e-learning at my universities, I did notice the use of forums for crowd sourcing, which is similar to microblogging discussion (groups). In my case, this certainly helped to gain a better understanding of the material. Further research is needed to test this empirically.

MIT Sloan Management Review cites Deloitte Center for the Edge co-chairman John Hagel on the need for social networking platforms (Kiron, 2012a, p. 2), who argues that most of the time (60-70 percent) of *most* functions is spent “handling exceptions” for which the employee has to reach out to others for help. He argues

⁶ An interesting note here is that new generations are argued to be better adapted to collaborative learning, which supports the idea of using ESN for e-learning as well Lancaster and Stillman (2003).

therefore that ESN is a good way to *identify* these *exceptions*. According to IDC (2012), “*knowledge sharing* is a core component of [ESN]”. Connelly & Kelloway (2003, p. 299) found that “an organizational environment that is conducive to social interaction is also conducive to knowledge sharing.”⁷ ESN provides a platform for this social interaction. Connelly & Kelloway also found that centrally controlled knowledge repositories were not of influence on knowledge sharing. But enterprise social networking is different from centrally controlled knowledge repositories. Where knowledge repositories are a form of knowledge management technology, enterprise social networking is a form of computer mediated communication⁸, which are two distinguishably different things. One allows to store, while the other allows communicating with others. Bradley & McDonald (2011) define the difference as follows: “Knowledge management is what company management tells me I need to know, based on what they think is important. Social media is how my peers show me what they think is important, based on their experience and in a way that I can judge for myself.”

In general, the often flatter organizational structures of today’s knowledge intensive companies mean there is more room or need for collaboration; *creativity* thrives better in such an organic structure (Amabile et al., 2004). Research showed that firms shifting from an informal organizational model to a bureaucratic model (e.g. because of going public) experience a significantly higher employee turnover than vice versa (bureaucratic to informal) (Baron et al., 2001, p. 991). It also has a negative effect in terms of morale and performance (Newell, 2009, p. 38 citing Robertson & Swan, 2004). This shows that an informal model where unstructured information is allowed to flow (e.g. through online social networks) is something positive (Hopins, 2011).

Zhang (2012) shows analytically that social software increases the probability that employees get the right knowledge and *become ‘culturally fit’*. London (2013, p. 77) argues that Web 2.0 functionality such as ESN facilitates self-management of teams and it allows them to “cross boundaries of space, organization, and culture.” He argues that generative learning⁹ takes place at these Web 2.0 environments and that,

⁷ It is argued that the biggest part of learning is done informally Lombardo and Eichinger (2000)

⁸ This brings about an important question. Is ESN a part or form of ‘social interaction culture’ such as the one Connelly and Kelloway (p. 299) describe?

⁹ Generative learning is self-initiated and self-controlled learning, where the learner selects which new ideas to incorporate with his existing knowledge as opposed to adaptive learning which is trainer-

based on case analysis, Web 2.0 technologies are used to “*learn about each other, develop ways of getting work done, become learning communities, and produce innovations*” (p. 80). J. M. DiMicco, D. R. Millen, W. Geyer, C. Dugan, & O. R. Street (2008, p. 2) note that ESN might serve as a social capital podium by creating a “higher sense of citizenship (willingness to help the greater good of the company)”, and access to expertise within the company. The opposite is also true, found Huy & Shipilov (2012). Huy & Shipilov found that not implementing ESN “reduced employees’ ability to identify peers with shared personal interest” and therefore the analyzed company lacked ‘attachment’ (p. 79)

ESN can be an *alternative for email communication*. Johri (2011) found in a case study that where privacy was not an issue, group blogging and group chat were much preferred over email and allowed for better coordination, communication and knowledge sharing. Using ESN and specifically microblogging instead of email may prevent one of the downsides of using email, which is information overload¹⁰. Whereas in email you either sent it to a person or you don’t, ESN provides several different ways to include a respondent in your message:

- Direct (private) message
- Posting a microblog on the content stream with a so-called ‘mention’ or ‘tag’ (e.g. @Arjan) of which the tagged user gets a notification
- Posting in a microblogging group discussion that the targeted user is a member of
- Posting an undirected microblog message without tagging anyone, that may reach the user when he or she regularly checks in on the ESN environment

As you can imagine, they all have their own different chance of being read by the targeted user(s). A request for immediate help, for example, is only relevant for those that read the request in time. This can be done by posting an undirected microblog message. These findings, taken from existing literature, show that an ESN-technology such as microblogging can potentially be beneficial for the organization. In the following section, I will show what the different purposes of microblogging messages can be.

led “acquiring [of] standard knowledge, skills, information, policies and procedures” London and Hall (2011, p. 758).

¹⁰ See Rasmus (2012) for a more complete overview of the problems with email and how future software technologies tackle these.

2.4. HOW CAN THE DIFFERENT PURPOSES OF MICROBLOGGING BE IDENTIFIED?

To search for relevant literature on microblogging purposes in knowledge work, I started searching with a meta-search and searched using a combination of the terms enterprise social networking, social software, social networks and microblogging.¹¹ At first through meta-search only peer-reviewed scholarly articles were considered. However, since there is a scarcity of research on this subject (the role of ESN), Google and Google Scholar were also used to identify working papers or other non-peer reviewed articles. In the following paragraph, I start with early research not only on microblogging but on the role of the whole ESN platform. After that I will narrow down to specific theory on microblog message purposes.

DiMicco, Geyer, Millen, Dugan, & Brownholtz (2009) analyzed the ESN platform “Beehive” at IBM. They found that the Enterprise Social Networking software at IBM was particularly used for socializing. They conducted analysis by (1) analyzing the content that users added to the site, (2) analyzing server access logs to see which pages in the platform were visited and (3) by conducting semi-structured interviews. The research was done in the first three months after the introduction of Beehive. Their findings are that Beehive is used for:

- Personal and professional information sharing – sharing content on the social aspects of the workplace, but even more about private life
- People sensemaking – the mental process of getting an understanding of who someone is, what his / her function is, what he / she is working on, etc.. In other words, creating a mental picture of a person based on their profile and shared content
- Relationship building – connecting with others (DiMicco et al., 2009)

The same authors later conducted a second research (2008a) on the same social network (Beehive) which revealed that of the “relationship building – connecting with others”, most of it was with so called *weak ties*: colleagues they either did not know well or colleagues they lost contact with. Besides that, the interviews and server logs showed that the platform actually led to business or personal relationships as well (DiMicco et al., 2008a). This trend went together with a decline in contact (through Beehive) with their direct “closer” colleagues. This seems logical, because the

¹¹ I used Google (Scholar), Proquest and Web of Knowledge

employees have the opportunity to talk face-to-face to their closer colleagues (DiMicco et al., 2008a). In fact, underestimating the benefits of connecting with weak ties could perhaps cause employees not to use ESN platforms. An illustration of this underestimation is a comment made by an employee of a multinational pharmaceutical company: “oh, yeah, those social media are great. Every week or so I get an e-mail saying I have two new friends. Otherwise, they do not bother me at all while doing my work; if I need any information I ask my colleagues in person” (Trkman & Trkman, 2011).

Anderson & Mohan (2011) studied cases of social networking at four knowledge-intensive companies. Their paper does not analyze the communicational data but rather uses semi-structured interviews where participants were selected through snowball sampling. The authors asked about the use of the social networking software, benefits, challenges and implementation outcomes. Since only one of the companies used microblogging, not all results are useful. At the only company in the research where microblogging was used, (a small software company based in the USA and China) it was used as a tool to ‘help employees keep in touch and to foster a sense of community’ (2011, p. 27). They also found that whatever role it has, this role can quickly fall away; if a thought leader would drop out of the process, others would follow. The authors also mention that at the software company, employees use social networking systems to ‘share both social and individual knowledge’ (Anderson & Mohan, 2011, p. 27). Although the source is peer reviewed, it is a magazine. This means a minimal amount of detail is discussed and therefore the authority of results cannot be fully ascertained.

In their recent working paper “S.O.C.I.A.L. – Emergent ESN Use Cases: A Multi Case Study Comparison”, Riemer & Richter (2012) analyze the result of several separate case studies. In these case studies, the contributions (microblogging messages & replies in the social network) of employees of knowledge-intensive firms were analyzed in order to find out for what purpose the social software was used. Riemer & Richter argue that from the described features of ESN, the real use cannot be derived. This is because, they argue, “these services are digital infrastructures that will only become defined through their use in context” (p. 4).¹² Orlikowski (1992, p. 408)

¹² An interesting example from the physical world is that of a school building built by volunteers somewhere in Africa. Six months after the building was completed, the volunteers returned to see how the school was doing. They found that instead of education, the locals used the school building as a barn for their sheep.

described it as follows: “In using a technology, users interpret, appropriate, and manipulate it in various ways, being influenced by a number of individual and social factors. [...] even the most "black box" technology has to be apprehended and activated by human agency to be effectual, and in such interaction users shape technology and its effects.” Technology and organization are “mutually constituted” – that is, they both shape each other (Newell, 2009, p. 57). This was the case with the emergence of email (Mackay, 1988) and it is the same case with social networking (Kiron, 2012b; Westman & Freund, 2010) and with digital (social) infrastructures in general (Ciborra et al., 2000; Orlikowski, 2000; Vaast & Walsham, 2013; Zittrain, 2009). This means that the structure of how employees use social networking software is appropriated over time.

Back to the article by Riemer & Richter. In the case studies that are described in the paper, genre analysis was applied to a sample of microblogging posts and replies to determine their purposes. Genre analysis is the study of “situated linguistic behavior” (Bhatia, 1997, p. 629). It studies how language is used within a particular context. Genres are “socially recognized types of communicative actions [...] that are habitually enacted by members of a community to realize particular social purposes” (Yates, Orlikowski, & Okamura, 1999, p. 84). In other words, within communities, certain patterns of communication become the norm. These patterns are genres and they on their turn act as templates for communication within the community (Riemer et al., 2012). A genre can be identified by *topic* (e.g. non work-related vs. work-related), *purpose* (e.g. ‘response’, ‘apology’) and *form* (e.g. ‘greeting’, ‘list’) (Yates et al., 1999) but other taxonomies are also possible.

Riemer & Richter analyzed and classified the microblogging messages in the random sample “according to the role a message plays when seen from the perspective of the community” (p. 18). The posts and replies were contributed by employees on the social networking software Yammer or Communote. Both are browser-based platforms. For a random sample of microblogging messages, Riemer & Richter identified the purpose(s) of each individual microblogging message. These purposes were subsequently narrowed down to come to a genre repertoire of top-level genre categories (Riemer et al., 2012). Based upon their cross-case analysis, their findings are that microblogging platforms are a space for:

Genre (purpose)	Use case	Description / examples
S ocializing	Informal talk	Informal talk about non work-related subjects
	Social praise	Praising others for help given or things achieved
O rganizing	Work coordination	Delegating tasks or offering services
	Meeting organization	Negotiating dates, collection of agenda items
C rowd sourcing	Problem solving	Asking for or providing help / solutions / access / expertise
	Idea generation	Crowd sourcing for ideas
I nformation sharing	Input generation	Posting about external input (e.g. URLs)
	Document storage	'Sharing' in order to remember
A wareness creation	Status updates	Posting work-related status updates (projects, initiatives)
	Event notifications	Sharing about upcoming events
L earning & Linkages	Discussion & opinion	Discussing a wide range of corporate, business, industry & country related matters

Table 2.2 - S.O.C.I.A.L. framework of enterprise microblog purposes (Riemer & Richter, 2012)

Concerning the last point 'Learning and linkages', Riemer et al. argue that "these conversations facilitate the emergence of a shared background that makes people see the world in similar ways, which is the foundation for all communication and joint work to take place effectively. [...] It provides the basis for all other ESN practices to thrive". Hence, Riemer & Richter argue that, the whole ESN space, including chit-chat and other 'non-useful' discourse, provides for an important common reference framework. That this common ground is important is supported in the literature (Burnett & Illingworth, 2008; Clark, 1996; Clark & Carlson, 1982; Cramton, 2001; Krauss & Fussell, 1991; Vlaar, van Fenema, & Tiwari, 2008), although other relevant ESN theory discussed in this thesis does not speak about it. Zhang et al. (2010, p. 130) does note however that "[the] lack of contextual information sometimes impedes immediate understanding by readers outside the poster's work group."

Together, these purpose genres make the catchy phrase S.O.C.I.A.L. Among the five cases they studied, a lot of difference is found between the companies. One uses microblogging mainly for work coordination, another mainly for discussion and opinion. Not all use cases were found in all organizations. Information sharing, for example, was not found at several organizations. (Riemer & Richter, 2012, pp. 14–16) argue therefore that ESN has a contextual nature. This study is relatively new and not

yet peer-reviewed, but its method (genre analysis) can already be assessed. Genre analysis in this situation (analyzing the use of new media) is both recommended (Orlikowski & Yates, 1994) as well as used in similar peer-reviewed research (Herring, Scheidt, Wright, & Bonus, 2005; Westman & Freund, 2010). It also is a technique that is compliant with activity theory which says that actions have to be analyzed in their context in order to come to a fruitful analysis (Kutti, 1996).

Zhang et al. (2010) conducted a case study of enterprise microblogging in a Fortune 500 company. With empirical microblogging data, user demographic information, surveys, interviews and usage statistics they analyzed the use, value and related issues of microblogging in the enterprise. Their results are, as they acknowledge, especially applicable for the first period of ESN platform use since it was done in an early stage of adoption (4 months). Based on earlier research (Java et al., 2007; Zhao & Rosson, 2009), Zhang et al. made an intention-oriented classification scheme with the following classifications:

- “Me” – posts about the author him or her self
- “Conversation seeking” – posting while seeking reply or directed postings
- “Share news or new found” – posts sharing news, events, etc.
- “About Yammer” – posts about Yammer
- “Others” – all post that do not fall in above classifications (Zhang et al., 2010, p. 126)

They found that “sharing news or new found” (37%) was the purpose with the highest frequency, then “conversation seeking” (25%), “about Yammer” (21%), “me” (16%) and “others” (1%). The coding was done with 2 independent coders with a high agreement ratio (0.81 kappa coefficient). Assuming the coding has been done correctly, the top level classification scheme has worked very well with only 1% in “others”. However, the classification scheme does not seem to be based on the purpose of the posts (which is my interest) but rather a description of the content. Comparing it with Riemer & Richter who described purposes of microblogging in ESN, several similarities can be identified. Table 2.3 summarizes the findings.

Purpose (Riemer & Richter, 2012)	Content (Zhang et al., 2010)
Socializing	12% of “Me” posts describe personal life outside work
Organizing	No specific evidence

Crowdsourcing ideas	33% of “Conversation seeking” consists of either seeking comments or question for answer
Information sharing	37% of all messages were sharing news or other information
Awareness creation	77% of “Me” posts are work-related.
Learning & Linkages	No specific evidence

Table 2.3 - Comparison between (Riemer & Richter, 2012) and (Zhang et al., 2010)

The posts “About Yammer” could perhaps be categorized under information sharing, awareness creation and learning & linkages. Further, Zhang et al. found evidence of that ESN was used more to connect with weak ties than with close ties, which is something that DiMicco et al. (2008a) also found.

Due to the timing of the research, the authors argue that their findings “should be limited to the early stage of Yammer adoption”. Also, as most studies up until now, it deals with only one company. This makes it harder to generalize the results. For example, while Zhang et al. found a disproportionally high microblogging participation of managers with 45% of the subjects having a lead position, DiMicco et al. (2008a, p. 714) found that only 10% of the ESN platform users they analyzed were managers. This however does not necessarily make the research results less valuable. Instead, it shows once again that digital infrastructures are used differently in different contexts.

Kiron et al. (2012) argue that social media in organizations fulfill a basic psychological need: the need to connect with others. Their survey among 3478 managers from 115 countries in 24 industries intends to reveal the reasons why people participate in social media at work. The top three are networking, working more effectively and voicing opinions (Kiron et al., 2012, p. 7).

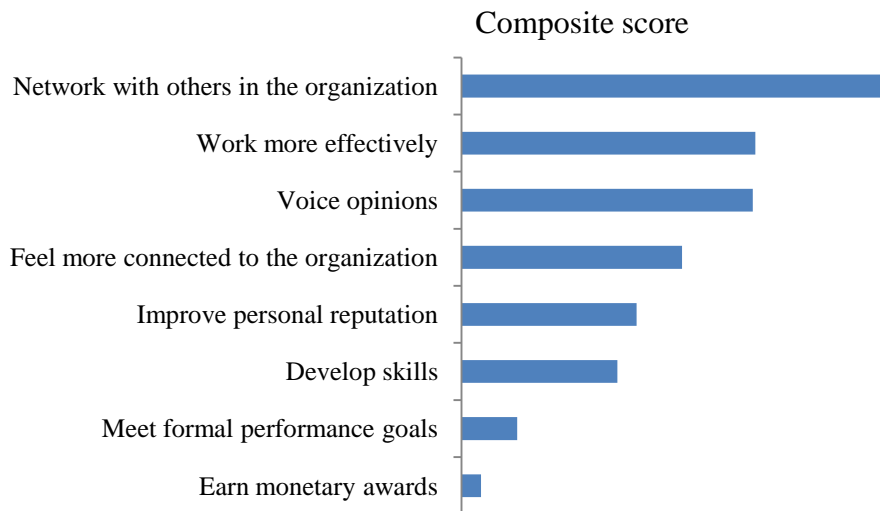


Figure 2.3 - Reasons why people participate according to respondents (Kiron et al., 2012)

Naturally, this does not show the purpose of the messages in context, but it does show what the contributor actually thinks he or she is getting out of ESN.

Table 2.4 integrates the findings of the various authors discussed in this thesis. The S.O.C.I.A.L. framework by Riemer & Richter (2012) explains most of the purposes of ESN microblogging identified by the other authors, as is visible in the third column. Therefore, I will use this framework in the design of the questionnaire. A different wording will be used however, to avoid idiomatic misinterpretations. E.g. the term “crowd sourcing” may not be understood by everyone and “learning & linkages” may be interpreted differently than intended.

Purpose according to author	Comment	Purpose according to S.O.C.I.A.L. framework
(DiMicco et al., 2009)		
Socializing		Socializing
Personal information sharing	Sharing content on private life & the social aspects of the workplace	Socializing
Professional information sharing	Sharing content on work-related topics	Information sharing
People sensemaking	Creating a mental picture of a person based on profile and shared content	Socializing
Relationship building	Connecting with others	Socializing
(J. M. DiMicco et al., 2008)		
Access expertise	Getting in contact with experts on a	Crowd sourcing

certain topic		
(Anderson & Mohan, 2011)		
Keep in touch		Socializing
Share social and individual knowledge		Information sharing
(Riemer & Richter, 2012)		
Social praise (socializing)	Thank or praise someone publicly for work done or help given	Socializing
Informal talk (socializing)	Non-work related conversations	Socializing
Work coordination (organizing)	(request for) update on tasks or task delegations	Organizing
Meeting organization (organizing)	Organize meetings interactively by talking about dates & agenda items	Organizing
Problem solving (crowd sourcing)	Asking for / offering help, expertise or resources such as documents	Crowd sourcing
Idea generation (crowd sourcing)	Sourcing for ideas, giving input	Crowd sourcing
Input generation (Information sharing)	Sharing input such as news or studies	Information sharing
Document storage (Information sharing)	Store information in a post with no specific audience in mind	Information sharing
Status updates (awareness creation)	Making others aware of what you are doing	Awareness creation
Event notifications (awareness creation)	Making others aware of an upcoming event	Awareness creation
Learning & linkages	Discussing of a wide range of corporate, industry or country related matters	Learning & linkages
(Zhang et al., 2010)		
Reach out to ask questions		Crowd sourcing
Find out what others are working on (increase awareness)		Awareness creation
Find people who share similar interests (build potential relationships)		Socializing
Communicate informally		Socializing
Learn about company internal news		Information sharing
Learn about industry trends and news		Information sharing
Share non-personal news or new findings		Information sharing
Seeking conversation	Raising a general issue to solicit comments or opinions	Socializing / Crowd sourcing
Sharing about what you are doing	work related or non-work related status update about self	Awareness creation
Talk about the ESN environment itself	Q&As, discussions or announcements on the ESN platform	Learning & linkages / Awareness creation / Information sharing

(Kiron et al., 2012)	
Network with others	Socializing
Voice opinions	Learning & linkages

Table 2.4 - Identified purposes of enterprise microblogging messages per author

To summarize, microblogging is used for different causes at different companies at different frequencies, presumably because enterprise social networking platform technology is bottom-up. That is, it is activated by human agency. The use of technology is a process of enactment in which the users shape the way they use technology, in each context differently (Orlikowski, 2000). Even if the technology “changes” the way people work, it might still be a different change than the one intended by the technology’s designers. More research such as this, gives more insight into how microblogging use is enacted.

3 METHODOLOGY

In this chapter, I explain my research design. I describe the research participants, and I explain the development and deployment of the survey that I use to get an answer on the research questions. The empirical part of this cross-sectional study assesses (1) the purposes of the microblogging messages that are being published by knowledge workers on ESN platforms, and (2) how microblogging supports the actions carried out by knowledge workers, with a self-administered questionnaire.

3.1. PURPOSE

The purpose of the study is mainly descriptive but also explanatory. The purposes of microblogging messages among knowledge workers are yet relatively unknown. Although there has been research done, it is a new field in which each additional research can help improve our understanding of the role of such a technology in the workplace. This study helps creating an accurate profile of this. The second, descriptive, part is to find out how knowledge workers use microblogging and if microblogging supports them in their work. The explanatory part is to find, for example, if the frequency of use of microblogging relates to how much or how often microblogging supports respondents in their work.

3.2. STRATEGY

Since it turned out too difficult to get access to the raw microblogging data myself, I pursued a mono-method survey strategy that has both a deductive as well as an inductive approach. The first research objective, to assess the purposes of the microblogging messages that are being published, is deductive in the way that it will test the purposes as found in the literature review. The second objective is inductive; it explores if microblogging is related to the actions carried out by knowledge workers and how it helps them in supporting their work.

3.3. SAMPLING DESIGN

The sampling method used is (nonrandom) self-selection sampling, by broadcasting the survey to those companies that are willing to cooperate. The choice for self-selection is because I was unable to identify the sampling frame. The required data can be found at any place where knowledge workers are active at using

microblogging internally. Basically anyone can be a respondent, because I filter out all non-knowledge workers and those that do not use microblogging.

The questionnaire was sent over the internet to one or more employees of these companies or institutions:

- The Portuguese branch of a worldwide company that offers networking solutions, organization A
- A worldwide organization specialized in quality management and assessments, organization B
- A worldwide industrial tank storage provider, organization C
- A municipality government in The Netherlands that governs an important industrial area, organization D

Organization A uses a proprietary tool. Usage of the tool is heavily promoted and used by the leadership team. Employees followed and started using it gradually more and more. Organization B uses Yammer. Its use is not being promoted by management and it is thought to have started somewhere by a few enthusiasts. Nevertheless there Yammer is a lively place with both management and others present. Organization C uses Yammer. It is actively used by senior management but not otherwise promoted. Finally, organization D also uses Yammer, further information not being available.

3.4. MEASUREMENT

3.4.1 Reliability

Participant error refers to how the measures will yield consistent results on different occasions. I believe my study has a minimal vulnerability to this, because it does not ask for volatile things like emotions. By keeping the questionnaire anonymous I expect to prevent participant bias as well. Likewise, observer error (concerning consistency of results when different researchers conduct the same survey) is not relevant here since it is a self-administered questionnaire. Furthermore, I try and prevent observer bias by predefining the meaning of the scores in the questionnaire, such as deciding when somebody is a knowledge worker in my view.

3.4.2 Validity

I try and ensure validity by:

- Adding an option for each respondent to reveal anything that he or she thinks is important but that the survey had left out. Follow-up interviews

are not part of this study, and therefore it is possible that there are relevant issues that I may miss out on. If the respondent feels this is relevant, he or she can provide this at the end of the survey.

- Making the survey anonymous. This possibly prevents participants believing that the results might negatively affect them.
- Making the questionnaire as short as possible (5-7 minutes), in order to prevent dropout & non-response.

3.4.3 Generalization

The results of this study cannot be generalized to the whole population of knowledge workers using microblogging. Strictly taken, they only say something about the population of anonymous respondents. The sample is self-selected and not random.

3.5. SURVEY DESIGN

The question topics were based on the literature described in this thesis. The whole survey can be found in the Appendix. In the questionnaire, I try to get answers on the research questions by finding out the following.

- Does the participant work with information, ideas & knowledge?
- Does the participant need creative skills for his/her work output?

These two questions are based upon the definition of knowledge work being *work that deals with knowledge, ideas and information, which needs creativity to accomplish tasks*. Although this is already broadly controlled by inviting knowledge-intensive companies to participate only, it is an extra check to be sure. The numerical measurement form is ranked (ordinal) data. The questions are based on Reinhardt et al. (2011), Frenkel et al. (1995) and Drucker & Smith (1966).

Please answer the following questions about the content of your work by choosing a point on the scale that best fits your work						
<i>I work with ideas, information and knowledge</i>	0	0	0	0	0	0
						<i>I work with my hands.</i>
<i>To produce my work output I need creative skills</i>	0	0	0	0	0	0
						<i>To produce my work output I follow a predefined set of steps</i>

Table 3.1 - This question tests whether the respondent can be classified as knowledge worker

In this thesis I define knowledge workers as people that choose a point in the left 3 options of the first scale (predominantly working with knowledge) and the left 4 of the second scale (having a degree of creativity in their work). This method has limitations in terms of reliability; e.g. creativity can perhaps not be measured by only one, previously untested question. However, I already control the audience by only letting knowledge-intensive companies participate.

- Does the participant use microblogging for his work?

The respondent is asked about if and how often he monitors other people's posts, and if and how often he contributes messages himself. The question is adapted from Kiron et al. (2012). The numerical measurement form is descriptive data.

In case the respondent gives a negative answer on whether or not he has contributed, he is asked to specify the reason and immediately taken to the question on demographics.

- What is the purpose of the microblogging messages he posts?

The respondent is first asked to recall his last microblog message that he himself posted on the corporate social networking platform. It can be either an initial post or a reply on someone else's post. The respondent is then asked which of the purposes as described in Table 2.4 (p. 16) best fits the purpose of this message in its context. This question is based on genre analysis as done by existing microblogging research (Riemer & Richter, 2012; Stocker, Richter, & Riemer, 2012; Westman & Freund, 2010; Zhang et al., 2010) which is explained in the literature review. Each respondent is asked specifically what the *purpose* of their last microblogging message is *in its context*. To test this, a second question is added, using the same categories, asking what, in their opinion, are the three most common purposes of their microblogging messages. For a category question like this one it is usually advised not to exceed 5 response categories (Saunders, Lewis, & Thornhill, 2009), however I believe that it is impossible to decrease the number of categories without losing accuracy. Also since I broadly follow the S.O.C.I.A.L. framework, I stick with these categories. However I do give the respondent the option to explain the answer in their own words if they think none of the categories describe the role of their last microblog message. Table 3.2 shows a list of microblogging purposes according to the S.O.C.I.A.L. framework (Riemer & Richter, 2012), but in a different wording that is more comprehensive and consistent with other theories (mentioned in Table 2.4).

Purpose genres	S.O.C.I.A.L.	Change with respect to S.O.C.I.A.L.
<i>Socializing & networking</i>	<i>Socializing</i>	<i>Added “networking” based on other theories</i>
<i>Organizing</i>	<i>Organizing</i>	-
<i>Reaching out to get (or give) answers or ideas</i>	<i>Crowd sourcing</i>	<i>Their own description of “crowd sourcing”</i>
<i>Knowledge & news sharing</i>	<i>Information sharing</i>	<i>Changed “information” to “knowledge & news” based on other theories</i>
<i>Reading & sharing personal status updates and public events</i>	<i>Awareness creation</i>	<i>Their own description of “Awareness creation”</i>
<i>Discussion & opinion</i>	<i>Learning & Linkages</i>	<i>Their own description of “Learning & linkages”</i>

Table 3.2 - Purpose genres

For each of the purpose genres I give the respondent some (mostly real-life) examples, which are shown in the Appendix.

- Does the participant feel microblogging supports him in his work?

Before testing if microblogging supports knowledge actions, the participant is asked two questions about whether microblogging (a) supports him in doing his work and (b) if the participant feels he is more productive using microblogging. (a) is on a frequency scale where (b) is on an agreement scale.

- For which knowledge actions does the participant use microblogging?

This is tested by asking respondents how often microblogging supports the knowledge actions that were defined by Reinhardt et al. (2011). I use a frequency scale (never --- always) because an agreement scale is perhaps not accurate enough about the importance in people’s daily jobs. Furthermore, I added ‘N/A’ with each question in case a knowledge action is not part of the respondent’s job. 12 of the 13 knowledge actions are tested, except ‘authoring’, which is producing textual or graphical content. Since microblogging is a form of authoring, I believe asking this would not give relevant results.

- Demographics

In case this will be of relevance, I added questions about the total headcount of the participants (parent) company and their primary functional affiliation.

- Other issues

For the cases where the survey failed to address a relevant issue, an optional, open question was added to give the respondent the opportunity to add this.

4 RESULTS & DISCUSSION

In this section I will describe the demographics, and the answers on the research questions (1) “What are the purposes of the microblogging messages that are being published by knowledge workers?” and (2) “How does microblogging support the actions carried out by knowledge workers?” I also will discuss what relations exist and what conclusions can be taken out of it.

4.1. DEMOGRAPHICS

136 people viewed the questionnaire, of which 89 started it and 56 completed it, which results in a completion rate of 62 percent. The average time to complete was 8 minutes, although this higher number than expected is partly due to outliers, such as one respondent that took more than 1 hour to complete the survey. The majority of respondents who completed the survey, work in companies with a total headcount above 10,000 (45%). Most of the respondents were active at Operations (18%), Customer service (18%), Information technology (16%) and Sales (16%). There were no respondents from General management and Supply chain operations management.

Department	Valid percent
Operations	18.2%
Customer service	18.2%
Other	18.2%
Information technology	16.4%
Sales	16.4%
Risk management	3.6%
Finance	1.8%
Marketing	1.8%
Research & development	1.8%
Human Resources	1.8%
Product development	1.8%

Table 4.1 - What is your primary functional affiliation? (n=56)

This means that 55 percent of respondents work on a primary activity in the organization.¹³ I was unable to compare this with the real situations. However, it is

¹³ According to Porter’s value chain model Porter (1996)

clear that the sample cannot be representative since some function types are not or hardly present.

4.2. KNOWLEDGE WORK

According to the used definition of knowledge work, not all respondents can be classified as knowledge workers. 84% of those who completed the survey qualify for this according to the two criteria I defined above. Hence 16% of the respondents are not knowledge workers. Table 4.2 shows the relative frequencies for each point on the scale of questions 1 and 2. Almost all respondents reported predominantly working with knowledge. The majority of respondents also reported that creativity plays a role in producing their work output.

Valid percent per chosen point on the scale						
I work with ideas, information and knowledge	0	0	0	0	0	0
	64	19	16	1	0	0
I work with my hands.						
To produce my work output I need creative skills	0	0	0	0	0	0
	10	20	35	20	9	6
To produce my work output I follow a predefined set of steps						

Table 4.2 - Relative frequency per point on the scale, Q1 & Q2

4.3. MICROBLOGGING

66% of all knowledge workers contribute microblogging messages at least “occasionally”. The rest of the knowledge workers reads other’s posts but never contributed (22% of knowledge workers) or does not use microblogging at all (12%).

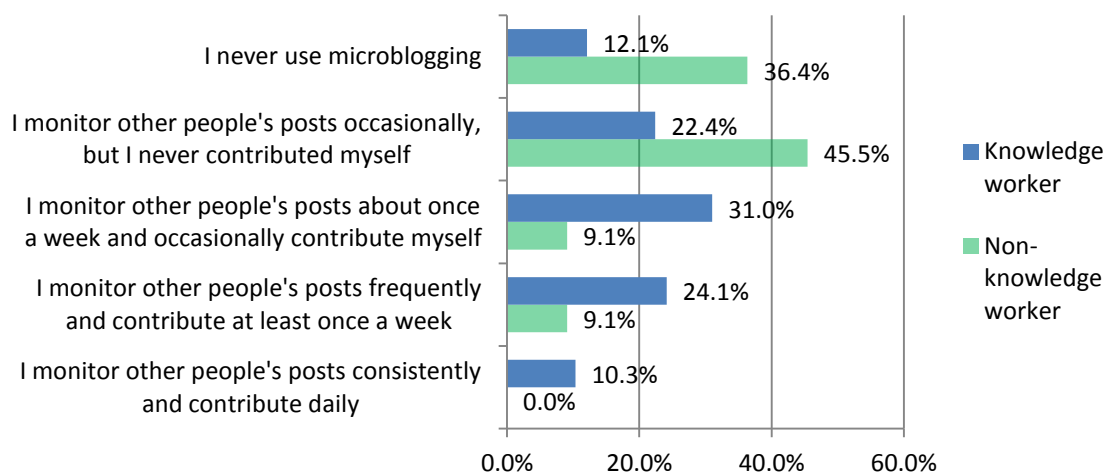


Figure 4.1 - Relative frequency of microblogging use between worker types (n=69).

The largest group of respondents monitors other people's posts about once a week and occasionally contributes themselves. Figure 4.1 shows the relative frequency of how knowledge workers and non-knowledge workers described their situation.

The data set only contains data from companies that use microblogging. It is interesting to see that non-knowledge workers answer more often that they do not use or do not contribute to microblogging. This would suggest a relationship between worker type and microblogging contribution. Due to the small amount of non-knowledge workers, an association between those two could only be found after grouping the contribution categories into "does contribute" and "does not contribute". As it turns out, worker type and message contribution are associated (Φ .351, $p < 0.01$, $n = 69$). Knowledge workers are much more likely to contribute microblogging messages than those that I do not consider knowledge workers. Of the non-knowledge workers, 82 percent answered they never contribute, while this is only 34% among knowledge workers.

		Knowledge worker		Total
		No	Yes	
Does not contribute	Count	9	20	29
	Expected Count	4.6	24.4	29.0
	% within Knowledge worker	81.8%	34.5%	42.0%
	Std. Residual	2.0	-.9	
Does contribute	Count	2	38	40
	Expected Count	6.4	33.6	40.0
	% within Knowledge worker	18.2%	65.5%	59.0%
	Std. Residual	-1,7	,8	
Total	Count	11	58	69

Table 4.3 - Cross table worker type vs. contribution yes / no

The association between worker type and microblogging contribution is caused by the answer on the ranking question "To produce my work output, I need creative skills" versus "To produce my work output I follow a predefined set of steps" (question 2). The need for creativity in one's job is strongly correlated with the amount of microblogging use (Spearman's ρ -.401, $p < 0.01$, $n = 69$). More creativity means more microblogging use. There is no significant relation between the amount of "working with ideas, information & knowledge" and microblogging contribution.

The qualitative data of the survey also reveals interesting results. Table 4.4 shows the reasons given by respondents as to why they did not write microblogs themselves. Knowledge workers that “monitor but don’t contribute” say this is because they do not know what to contribute (yet), whereas non-knowledge workers do not specify those reasons. Instead, 7 out of 9 responses from non-knowledge workers specify lack of time or disinterest. Knowledge workers only specify this reason 2 or 3 times out of also 9 responses. Knowledge workers seem to think more in terms of contribution value, or return on investment of time. One knowledge worker that did use microblogging wrote as an extra comment: “I feel that we have too many channels to use, e.g. Yammer, Lync, own helpdesk tool, phone, e-mail. Hard to keep up on all and some people post the same item to several channels. “

	Knowledge worker	Non-knowledge worker
I monitor other people's posts occasionally, but I never contributed myself	“New at the company”	“No time or patience”
	“I'm fairly new to Yammer and haven't yet seen a topic to which I could contribute.”	“Only posts replied were personal ones”
	“I don't feel that I have something to contribute with”	“I never felt the need to.”
	“I follow microblogging on [company]'s Yammer profile. I have nothing important to contribute.”	
I never use microblogging	“Quality info is not in balance with the time to spend for blogging”	“I believe you should address a person personally as a supervisor”
	“I don't need microblogging in my job	“There is the possibility but I have never use it”
	“nobody uses it, no time to use it”	“Not interested”
	“I don't really think it enhances the quality of my output”	“no time to use it”
	“I dont like it”	“I don't like it”
		“not really into it at the moment”

Table 4.4 - Quotes (exact) from respondents on the reason not to contribute

This shows once again that knowledge workers have a different stance on microblogging then non-knowledge workers. Why exactly, would need further research.

The two questions regarding the effect of microblogging on respondents’ work “In general, microblogging supports me in performing my work” (Q6) and “In general, I feel more productive using microblogging” (Q7) are consistent ($\alpha = .756$). There is

however no significant association between these and worker type (knowledge worker yes / no). This would mean that knowledge workers do not feel more or less supported by microblogging than non-knowledge workers do. However, this insignificance is to my expectation mainly due to the small amount of non-knowledge workers in the sample that reached these questions (recall that most non-knowledge workers don't use microblogging and therefore did not reach this question). 87 percent of knowledge workers answered that microblogging supports them in their work sometimes or more and 56 percent feel they are more productive using microblogging¹⁴. Of those that carry out a primary activity, these numbers are 88 and 50 percent. There is also a positive correlation between the frequency of microblogging use, and these questions 6 and 7: higher microblogging use leads to a higher score for (Q6) "In general, microblogging supports me in performing my work" (Kendall $\tau=.453$, $p<0.01$) and (Q7) "In general, I feel I am more productive using microblogging" ($\tau=.332$, $p<0.05$). In other words: the more a respondent uses microblogging, the more he feels he benefits from it. Although this does not automatically imply causality, promoting enterprise social networking among employees and supporting them to share can perhaps cause people to see the value of it. Or, if causality goes the other way, promoting the benefits may lead to a higher usage. Further research can shed more light on this. Figure 4.2 and Figure 4.3 show the answers given on Q6 and Q7.

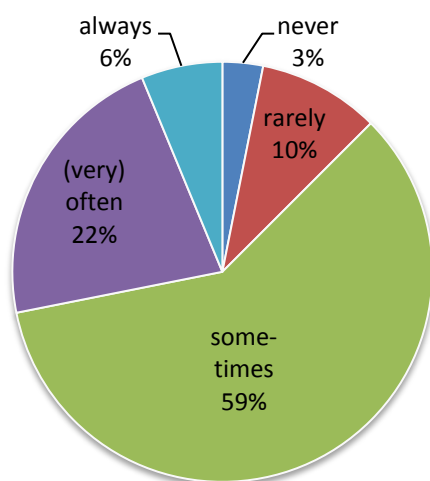


Figure 4.2 - In general, microblogging supports me in my work (Q6, knowledge workers only)

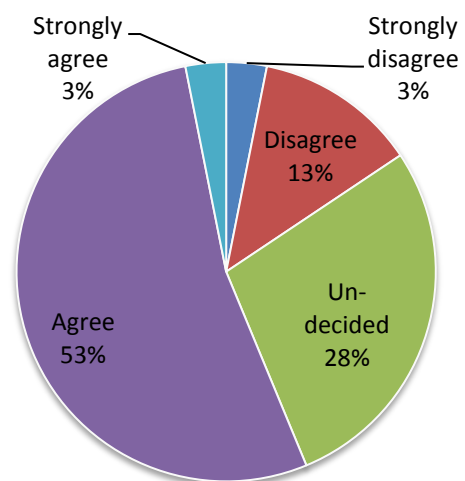


Figure 4.3 - In general, I feel I am more productive using microblogging (Q7, knowledge workers only)

¹⁴ Agree / strongly agree. Also please note that this is among people that actually use microblogging.

4.4. WHAT ARE THE PURPOSES OF THE MICROBLOGGING MESSAGES THAT ARE BEING PUBLISHED BY KNOWLEDGE WORKERS?

The results give an interesting insight into the purposes of microblogging messages. It is not the goal of this research question however to compare it with existing research in terms of frequency per purpose. The little research that has been done shows different results with data from different companies. Some purpose genres were relatively large at one company, while at another company they were not present at all. Take the purpose 'Organizing' for example. At one organization, Riemer & Richter (2012) found that almost 50 percent all the microblogging messages purposes was work coordination, while at another firm this purpose was identified at less than 1 percent of the contributed messages. The research conducted for this thesis is therefore important as an addition to the existing results by others. Please note that unless stated otherwise, all following statistics and figures are only based on the responses of knowledge workers. Non-knowledge workers are excluded from these analyses.

Q4 "Which of the list below best fits the purpose of this [last] message in its context?"	
	Valid percent
Knowledge & news sharing	53.1%
Reaching out to get (or give) answers or ideas	21.9%
Socializing & networking	12.5%
Discussion & opinion	9.4%
Other	3.1%
Reading & sharing personal status updates and public events	0.0%
Organizing	0.0%

Table 4.5 - Purpose of the respondents last microblogging message in context (knowledge workers only)

The respondents were asked to choose which of the list best fitted the purpose of the last microblogging message that they contributed (either an initial post or a reply). The purpose that was reported most is "Knowledge & news sharing". In fact, it has an absolute majority of 53 percent. This perhaps means that for knowledge workers, a technology or service is most useful when it allows knowledge and news to be shared among each other. The top 3 goes further with "Reaching out to get (or give) answers or ideas" (22 percent). There is a difference between this and "Knowledge & news sharing": where "Knowledge & news sharing" is more about posting external

input or interesting facts, “reaching out” is more about crowd sourcing: asking for or providing help on specific work related issues. However, there might be some overlap in the respondents’ perception of those two questions. The third most reported purpose is “Socializing & networking” (13 percent). The only “Other” category answer was “job prospection” in both questions Q4 and Q5. This “job prospection” can perhaps fall under networking.

In the next question, the respondents could report which 3 purposes of their microblogging messages occur most frequently. Besides the previously mentioned top-3 of just their last message again having a high frequency here, something unexpected shows up. The third biggest purpose genre is not socializing & networking, as it was in the first question. Instead with almost half of the respondents reporting this purpose, “Discussion & opinion” is the third largest one. Another difference is the purpose genre “Reading & sharing personal status update and public events”, which is not at all present in the last messages by the respondents, but is still identified as one of their 3 most common contribution purposes by almost 20 percent of the respondents. The difference is more clearly visible in Figure 4.4.

Q5 “In general, the 3 most frequent purposes of my microblogging messages are...”			
	n	percent	percent of cases
Knowledge & news sharing	29	38.2%	90.6%
Reaching out to get (or give) answers or ideas	15	19.7%	46.9%
Discussion & opinion	14	18.4%	43.8%
Socializing & networking	10	13.2%	31.2%
Reading & sharing personal status updates and public events	6	7.9%	18.8%
Organizing	1	1.3%	3.1%
Other	1	1.3%	3.1%
Total	76	100.00%	

Table 4.6 - Most frequent 3 purposes of microblogging messages (only knowledge workers)

It is unsure why these differences appear. Perhaps a larger sample would make the differences smaller. Another reason could be bias, which can have occurred at both questions. Also, please note that comparing these two figures must be done without exact precision, because the second question does not ask “Please report all the purposes of all your microblogging messages”. Instead, it asks for maximum 3 of the most common purposes. Using Fischer’s Exact Test we can obtain an exact probability value for the relationship between the purposes of the last microblogs (Q4)

and the 3 most frequent purposes in general (Q5). Table 4.7 shows that the first three purposes and the last one are indeed equal. 2 of them cannot be tested due to a count of zero. “Discussion & opinion” however, is unequal. This could mean that there is a difference between how much people think they discuss, and how much they actually

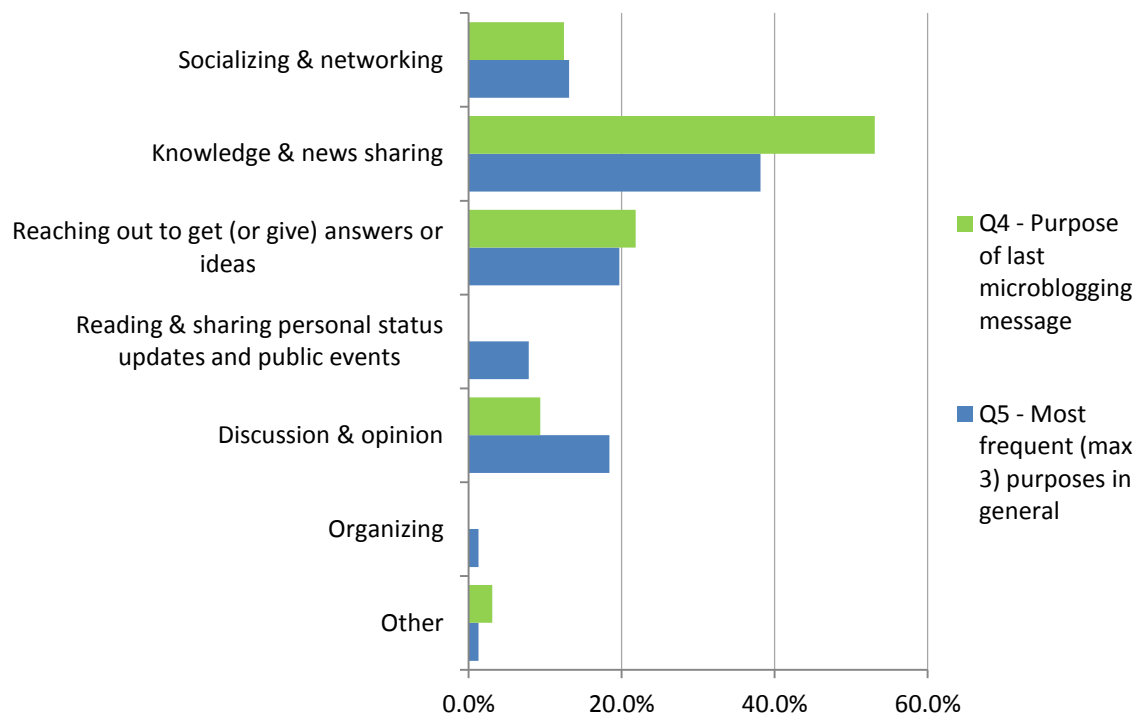


Figure 4.4 - Reported microblogging message purposes compared
discuss. In this case, employees perhaps overestimated the amount of discussion (bias).

Purpose	Significance (Fischer's Exact Test, 2-sided)
Socializing & networking	.007
Knowledge & news sharing	.030
Reaching out to get (or give) answers or ideas	.028
Reading & sharing personal status updates and public events	n=0 (Q4)
Discussion & opinion	.061
Organizing	n=0 (Q4)
Other	.029

Table 4.7 - Significance of the relationship between the last microblog's purpose and the most common purposes in general.

A few points can be made to summarize the findings:

- The list of purpose genres of the S.O.C.I.A.L. framework (Riemer & Richter, 2012) seems to be sufficiently broad to hold almost all of the purposes of people's microblogging messages.
- Comparing it with existing theory, once again we can see that the purposes appear at varying frequencies in different contexts. Different settings, cultures, goals and different ways of researching the phenomenon show the same list of purposes, but at varying frequencies.
- In my sample, knowledge & news sharing, crowd sourcing, discussion & opinion and socializing & networking are the most important purposes. "Reading and sharing personal updates and public events" plays a smaller role that could not be found at all in the last microblogs of respondents (Q4). Instead, this role was only identified in Q5 (3 most common purposes) by 8 percent of the respondents. "Organizing" virtually plays no role.

In the next section, I will elaborate on the second empirical research question about the connection between microblogging and knowledge actions.

4.5. HOW DOES MICROBLOGGING SUPPORT THE ACTIONS CARRIED OUT BY KNOWLEDGE WORKERS?

Microblogging is used for all the knowledge actions. Some however are much more often used than others. Figure 4.5 and Table 4.8 show the statistical data about how the online microblogging environment in the company supports the work of the responding knowledge workers.¹⁵ Perhaps as expected, *Dissemination* (share & spread information) is the most popular¹⁶ knowledge action for which the microblogging environment is used. 89 percent reported "sometimes" or more and still an absolute majority of 54 percent reported "(very) often" or "always". *Information search* is the second most popular action on the microblogging environment with 39 percent reporting (very) often or always. On the low end, most people reported never or rarely to do any *Service search* on the microblogging environment (68 percent). *Information organization* (storing for later re-use) is also unpopular with 59 percent reporting never or rarely.

¹⁵ Please note that also here only knowledge workers are used in the analysis.

¹⁶ By answering "(very) often" or "always"

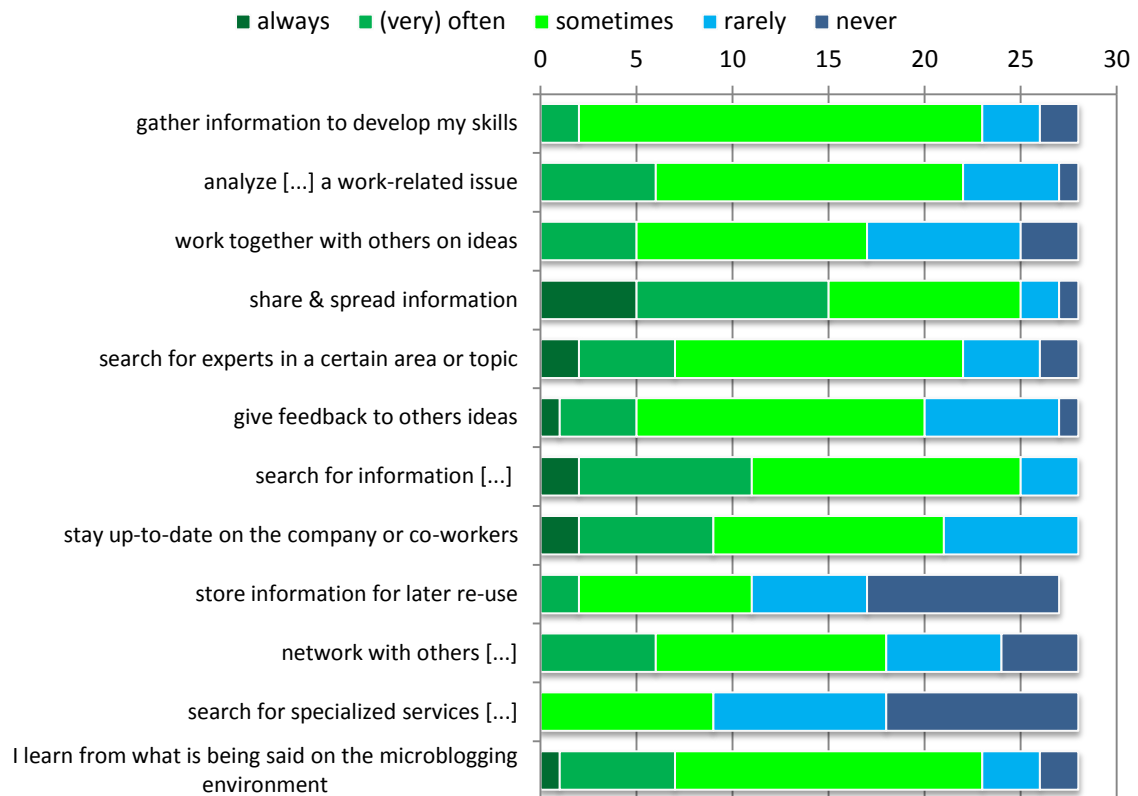


Figure 4.5 - "I use the microblogging environment to..."

Knowledge action	Description	\bar{x}	Md	Mo	never	rarely	someti mes	(very) often	always
Acquisition	gather information to develop my skills	2.82	3	3	7.1%	10.7%	75.0%	7.1%	0.0%
Analyze	analyze (perhaps together with others) a work-related issue	2.96	3	3	3.6%	17.9%	57.1%	21.4%	0.0%
Co-authoring	work together with others on ideas	2.68	3	3	10.7%	28.6%	42.9%	17.9%	0.0%
Dissemination	share & spread information	3.57	4	3	3.6%	7.1%	35.7%	35.7%	17.9%
Expert search	search for experts in a certain area or topic	3.04	3	3	7.1%	14.3%	53.6%	17.9%	7.1%
Feedback	give feedback to others ideas	2.89	3	3	3.6%	25.0%	53.6%	14.3%	3.6%
Information search	search for information (e.g. something somebody else posted)	3.36	3	3	0.0%	10.7%	50.0%	32.1%	7.1%
Monitoring	stay up-to-date on the company or co-workers	3.14	3	3	0.0%	25.0%	42.9%	25.0%	7.1%
Information organization	store information for later re-use	2.11	2	1	37.0%	22.2%	33.3%	7.4%	0.0%
Networking	network with others: exchanging information & developing new contacts	2.71	3	3	14.3%	21.4%	42.9%	21.4%	0.0%
Service search	search for specialized services (e.g. translation of a document)	1.96	2	1	35.7%	32.1%	32.1%	0.0%	0.0%

Learning	I learn from what is being said on the microblogging environment	3.04	3	3	7.1%	10.7%	57.1%	21.4%	3.6%
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Table 4.8 - Statistics of “I use the microblogging environment to...” (n=28)¹⁷

I correlated “In general, microblogging supports me in performing my work” (Q6) with each of the knowledge actions separately, using Kendall tau-b correlation testing. Interestingly, it only correlated ($p < 0.05$) with the 2 most popular¹⁸ actions *Dissemination* ($\tau = .385$) and *Information search* ($\tau = .402$), as well as the action *Acquisition* ($\tau = .348$). This means that feeling supported by microblogging is dependent only (or mostly) on the use of microblogging for these 3 knowledge actions. The use of microblogging for dissemination, information search and acquisition is therefore a positive force in the usefulness of microblogging for someone’s work.

Taking the average of all 11 knowledge actions, and testing that against “In general, microblogging supports me in performing my work”, a Cronbach’s alpha of .648 and a Kendall tau-b correlation coefficient of .350 ($p < 0.05$) is identified. Hence, overall there is a positive relationship between using microblogging for the knowledge actions, and the frequency of feeling supported by it.

There is no significant association between the microblogging purpose(s) (Q4&Q5), and how often microblogging supports people in their work. A larger sample would probably yield significant results however this could not be found in this study. Overall, work output seems to benefit from microblogging. That is logical considering that knowledge is shared and problems are solved using the microblogging environment, the enterprise social networking platform. What previous research concluded as well is that the ESN platforms are generally used to connect with weak ties more than with strong ties. Again, this seems logical: your strong ties are the ones you stay in contact with in the real world more often, which gives less need for connecting through microblogging as well. Actually, within the confined space of an office, knowledge is being shared automatically by hearing each other. Those co-workers that you do not physically see often have the same need for new knowledge however, problem solving, discussion etcetera. ESN provides the extension of the

¹⁷ In Table 4.8 the mean is used to give a better idea of the average answer. I agree with most scientists that follow the measurement typology of Stevens (1946) which says that the mean should be used with ordinal scales. However I do believe that it’s a useful addition to compare the knowledge actions (and their medians) without basing any major conclusion on it. See also Jamieson (2004) for a discussion on this topic.

¹⁸ With the largest frequency of “(very) often” and “always”

smaller physical network that you are in by potentially connecting you to much more people at the same time. Managers therefore need not be afraid of the information flowing freely in these microblogging environments.

5 CONCLUSION

Where there is the possibility, most knowledge workers seem to make use of the microblogging services of Enterprise Social Networking platforms. Knowledge workers use it much more often than non-knowledge workers and seem to think about microblogging in terms of cost/benefit for their work, instead of basing it on how much they like it. Whereas non-knowledge workers tend to show a general disinterest as the reason not to contribute, knowledge workers tend to explain not knowing what to contribute as the reason.

The S.O.C.I.A.L. framework by Riemer & Richter (2012) seems to be sufficiently broad to hold all possible purposes of microblogging messages, albeit with the addition of “networking” which they do not mention in their framework. Among the knowledge workers, microblogging is primarily a service used for the *sharing of knowledge & news, solving problems* (crowd sourcing) and *discussion & opinion*. Besides that, it seems to be an extension of the existing workplace where also *socializing and networking* takes place. In my sample, use of the social networking platform for *reading & sharing personal status updates* as well as *organizing* has a smaller role. Most knowledge workers learn from what is being said on the microblogging environment. They share and search for information using the microblogging environment, and also monitor the platform to stay up to date on co-workers. Given the contextual nature of ESN, the frequencies might vary among different companies.

Using the microblogging environment for *sharing* and *searching for information* and for *acquiring skills*, is positively related to the perceived benefit of microblogging in people’s work. In general, a majority of knowledge workers believe their work benefits from using the microblogging environment. There is a relationship between microblogging usage and perceived benefit.

Microblogging seems to be a worthy addition to the existing means of communication in the workplace, and is especially useful to let knowledge, news, and social contact reach a further and broader audience than it would in a situation without this social networking service.

6 LIMITATIONS & RECOMMENDATIONS FOR FUTURE WORK

A limitation of this study is the sample size which is relatively small. Also, the image that will come out of a self-selection survey can substantially differ from the image that will arise through a random cross section sample of management and employees. Since the questionnaire is anonymous, I cannot verify how representative the sample really is. However, even if my results would be perfectly representative, it could still be that the survey is answered only by the ESN-enthusiasts and ignored by the skeptics (non-response bias). Another point of critique is that at one of the firms, the survey could only be shared using the ESN tool, and not by e-mail. This means that there is a bias in the figures on microblogging frequency.

All this does only matter to a certain extent. My research applies to all knowledge workers, no matter the functional affiliation. And through my research I prove that there actually is a group of knowledge workers that achieves higher work performance through microblogging. I also show what they use microblogging for. In my opinion, the important question is not “who exactly uses microblogging in the company?”, but more: “of the people that use it, who are they and (how) does microblogging support them?”

Further research is needed to find out more differences between knowledge workers and non-knowledge workers with respect to microblogging. For example, several knowledge workers did not want to contribute because they did not feel as if they had something important to contribute. When is something important or smart enough for a knowledge worker to share it on the ESN platform? And is there a difference with non-knowledge workers?

Doing the same research as the one described in my thesis among a random cross section of employees is also needed to build solid theory, perhaps through a random cross section of a company. Also, more extensive research is needed to assess the usefulness of the technology among knowledge workers specifically, perhaps according to the Technology Acceptance Model (Davis, 1989).

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APPENDIX I QUESTIONNAIRE

Please note that the questionnaire below may differ from the real Web-based survey in terms of layout: image size, button type and text font may be altered. I kept the resemblance as close as possible.

Hello:

Thank you for participating in this anonymous survey about Social Networking. Your participation is very important for me to get the best understanding possible of how you use social networking at work.

Approximately 500 people will be asked to complete this survey about microblogging. It will take approximately 5 to 7 minutes to complete the questionnaire.

Your participation in this study is completely voluntary and it is completely anonymous. Your survey responses will be strictly confidential. If you have questions at any time about the survey or the procedures, you may contact Arjan van der Laan at avdlaan85@hotmail.com.

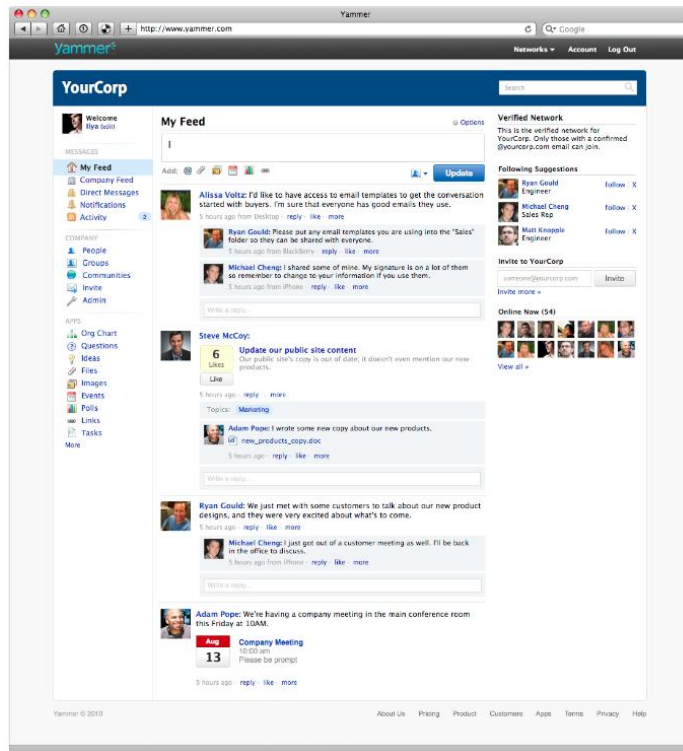
Thank you very much for your time and support. Please start with the survey now by clicking on the Continue button below.

**Arjan van der Laan
Social Networking Researcher**

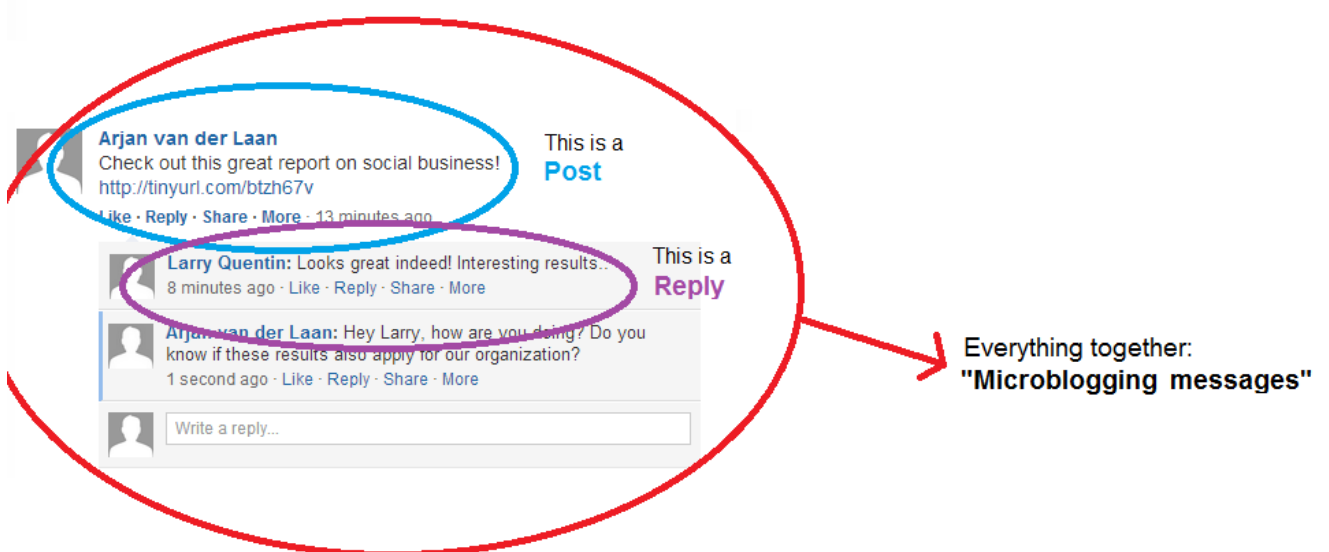
In this survey, you will answer 8 questions about social networking at your company.

If you are unsure what this means, please take a look below this text to see some examples.

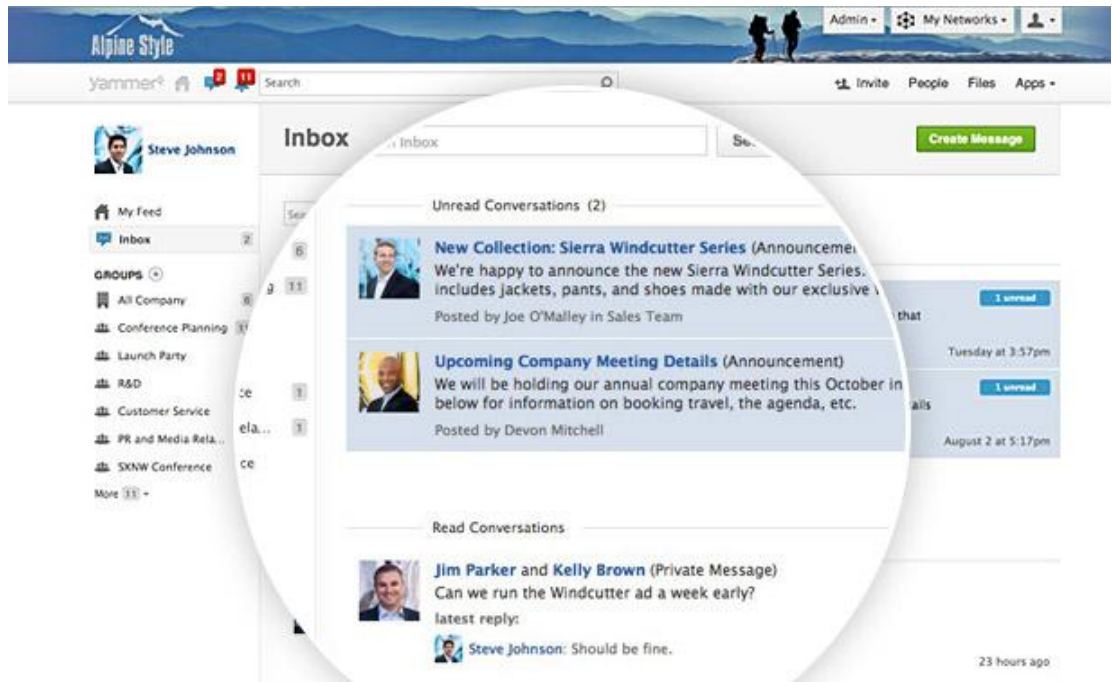
This is an example of an enterprise social networking site. We call the short messages that people publish in the middle of the screen, “microblogging messages”.
(Note: Images bigger in real survey)



In this survey, a microblogging message can be a post or a reply. This is what to think of when you will see microblogging message, post or reply in the survey.



Together, the whole platform is called an Enterprise Social Network environment



Now you will be asked 3 questions about the content of your work and microblogging

Please answer the following questions about the content of your work by choosing a point on the scale that best fits your work:

I work with
ideas,
information and
knowledge

0

0

0

0

0

0

To produce my
work output I
need creative
skills

0

0

0

0

0

0

I work with my
hands

To produce my
work output I
follow a
predefined set of
steps

0

Please choose the answer that best describes your situation:

- ☐ I never use microblogging
 - ☐ I monitor other people's posts occasionally, but I never contributed messages myself
 - ☐ I monitor other people's posts about once a week and occasionally contribute myself
 - ☐ I monitor other people's post frequently and contribute at least once a week
 - ☐ I monitor other people's post consistently and contribute daily
-

You mentioned you do not contribute messages yourself. Is you wish, please specify the reason.

You mention you do not make use of microblogging. If you wish, please specify the reason.

- ☐ At my organization, there is no microblogging possibility
- ☐ Im not allowed to use social networking tools
- ☐ Other

You mentioned that you use microblogging at your work. Now, you will be asked 2 questions about the purpose of your microblogging messages. For this, you will need to open your enterprise social network site. Please recall that a microblogging message can be any post or reply on your enterprise social network environment.

Please recall the last microblog message that you posted yourself on the corporate social networking platform. This can also be a reply on somebody else's post. If you can't look up your own message history, think of the most recent microblog message you remember. Which of the list below best fits the purpose of this message in its context? Choose from the list below, or choose 'other' and explain in your own words.

For each of the categories, examples are given below.

- ☐ Socializing & networking
- ☐ Knowledge & news sharing
- ☐ Reaching out to get (or give) answers or ideas
- ☐ Reading & sharing personal status updates and public events
- ☐ Discussion & opinion
- ☐ Organizing
- ☐ Other

Purpose	Examples
Socializing & networking	<i>"Congratulations on your baby. Wish you all the best!"</i> <i>"Thank you for this interesting mindmap. Can I contact you about this subject when I have a question?"</i> <i>"Well done John!"</i>
Knowledge & news sharing	<i>"Marketing today published this report on social media use http://link"</i> <i>"The address for the new B&W printer is [...]"</i> <i>"This is a step-by-step guide on how to best implement microblogging in your work [attached guide.pdf]"</i>
Reaching out to get (or give) answers or ideas	<i>"How can we make the microblogging Marketing group more useful to those who have joined?"</i> <i>Person A: "For working with government agencies, how does [...] work? Person B: - For working with government agencies, please check these rules: [...]"</i>
Reading & sharing personal status updates and public events	<i>"Going to the CRM conference today"</i> <i>"Today I started working on project [...]"</i>

	<i>"On September 8, [...] organizes another cloud computing conference"</i>
Discussion & opinion	<i>"Wow – elections are expensive & inefficient. Last federal election costed \$ 163 billion"</i> <i>"I don't think this new tax-law is going to change much, what do you [everybody] think?"</i> <i>"This new microblogging feature is amazing!"</i>
Organizing	<i>"This appointment is inconvenient. I would prefer 27-03 at 3pm"</i> <i>"@John, can you please give Larry access to the CRM system? Thanks!"</i>

Please choose up to 3 categories that best describe how you use microblogging at work. In general, the 3 most frequent purposes of my microblogging messages are...

- ☐ Socializing & networking
 - ☐ Knowledge & news sharing
 - ☐ Reaching out to get (or give) answers or ideas
 - ☐ Reading & sharing personal status updates and public events
 - ☐ Discussion & opinion
 - ☐ Organizing
 - ☐ Other
-

In general, microblogging supports me in performing my work

- ☐ never
 ☐ rarely
 ☐ sometimes
 ☐ (very) often
 ☐ always

In general, I feel I am more productive using microblogging

- ☐ strongly disagree
 ☐ disagree
 ☐ undecided
 ☐ agree
 ☐ strongly agree
-

We're halfway. Now, you will be asked how microblogging supports your work tasks. You will see a list of actions. For each action, you can choose how often you use microblogging for it.

This question identifies how the online microblogging environment in the company supports your work. Please answer the following questions on a scale from 1 (never) to 5 (always). If an action is not part of your work, choose N/A (not applicable)I use the online microblogging environment to...

	never	rarely	sometimes	(very) often	always	N/A
- gather information to develop my skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- analyze (perhaps together with others) a work-related issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- work together with others on ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- share & spread information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- search for experts in a certain area or topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- give feedback to other's ideas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- search for information (e.g. something somebody else posted)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- stay up-to-date on the company or co-workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- store information for later re-use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- network with others: exchanging information & developing new contacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- search for specialized services (e.g. translation of a document)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
- I learn from what is being said on the microblogging environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ALMOST done! The last few questions are about the size of your company and your function.

What is the size of your (parent) organization (total number of employees)?

- ☐ Above 100.000
- ☐ 10.000-100.000
- ☐ 5.000-10.000
- ☐ 1.000-5.000
- ☐ 500-1000

- ☐ 250-500
- ☐ under 250

What is your primary functional affiliation?

- ☐ General management
- ☐ Finance
- ☐ Marketing
- ☐ Information technology
- ☐ Operations
- ☐ Research & development
- ☐ Human resources
- ☐ Product development
- ☐ Sales
- ☐ Customer service
- ☐ Supply chain operations management
- ☐ Risk management
- ☐ Other

**Are there issues about using microblogging at work that this survey did not address?
(OPTIONAL)**

Done, please click Finish to save the results. Enter your email address if you want to be notified of the results (OPTIONAL)

Email